

UNITED STATES PATENT APPLICATION

**FLAT DECK APPARATUS AND METHOD**

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# FLAT DECK APPARATUS AND METHOD

## Related Applications

This application claims the benefit of the filing date of U.S. application  
5 Serial No. 60/443,759, filed January 30, 2003, under 35 U.S.C. § 119(e), the  
disclosure of which is incorporated by reference herein in their entirety.

## Technical Field

Embodiments of the invention relate generally to decks for houses,  
10 residential dwellings, cottages and cabins. More particularly, the embodiments of  
the invention relate to a flat deck apparatus and method.

## Background Information

Many residences, cabins and cottages now have a deck attached directly to  
15 the house. In some areas of the country, a deck is built adjacent the house or  
cottage. A deck provides additional recreational space for enjoying the outdoors.  
Many decks provide space for grilling as well as for outdoor furniture used for  
relaxing. Others use a deck for sunbathing or other recreational purposes. Many  
decks are elevated above the ground and provide users with an elevated view of the  
20 real estate near the deck.

There are problems with associated with decks made from lumber. One  
problem is that decks made from wood are difficult to construct so that a  
substantially flat surface is formed for receiving the decking material. Some  
decking material now requires a substantially flat surface. Decks built from lumber  
25 must be sanded and planed numerous times before the surface for receiving the deck  
is of an appropriate flatness. The problem stems from the fact that wood headers  
and joists, or the portions of the deck needed to form the frame have large  
tolerances. In essence, wood deck material does not have consistent dimensions.  
The wood also warps and twists as it dries which adds to the difficulty of building a

square frame with a substantially flat surface. Furthermore, in order to form a flat deck, one or more carpenters must position the joists of the frame exactly with the header so that the joist is substantially flat with respect to the header. The same procedure must be accomplished on both ends of the joist. This takes time.

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Still another problem is that the deck framing is typically built on site with pressure-treated lumber. Until recently, most treated wood contained arsenic.

Arsenic has been determined to be harmful to humans. Thus, it is being phased out as a wood preservative. Furthermore, even if the lumber is treated, lumber has a

10 limited life and requires periodic maintenance over that life. A treated lumber frame will last from 10-20 years. Then it will need to be replaced. Over the life of the deck at approximately 2-year intervals, the deck will need to be cleaned and stained. In most instances, consumers prefer a more carefree product with longer or substantially infinite life.

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### **Summary of the Invention**

An apparatus for a deck includes a first frame member, and a second frame member. One of the first frame member or the second frame member has a spacing element thereon. The spacing element spaces the one of the first frame member or  
20 the second frame member with respect to the other of one of the first frame member or the second frame member. In one embodiment, the spacing element includes a lip formed with respect to one of the first frame member or the second frame member. The spacing element can also be a connector associated with at least one of the first frame member or the second frame member. A method for assembling a  
25 deck frame that includes placing a first frame member with respect to a second frame member, wherein one of the first frame member or the second frame member has a spacing device thereon; temporarily attaching the first and the second frame members; and permanently attaching the first and the second frame members.

### **Brief Description of the Drawings**

FIG. 1 is a perspective view of a deck attached to a residential structure according to an embodiment of the invention.

FIG. 2 is a perspective view of a deck frame according to an embodiment of  
5 this invention.

FIG. 3 is a top view of a deck frame according to an embodiment of this invention.

FIG. 4 is a perspective view of a deck frame corner connector according to an embodiment of this invention.

10 FIG. 5 is a perspective view of a header or ledger board according to one embodiment of this invention.

FIG. 6 is a perspective view of a header or ledger board according to another embodiment of this invention.

15 FIG. 7 is a perspective view of a header or ledger board according to still another embodiment of this invention.

FIG. 8 is a perspective view of a header or ledger board according to yet still another embodiment of this invention.

FIG. 9 is a perspective view of a joist that includes a spacing element according to an embodiment of the invention.

20 FIG. 10 is a perspective view of corner connector that includes spacing elements according to an embodiment of the invention.

FIG. 11 is a perspective view of a connector for attaching a joist to a header of the frame that includes a spacing element according to an embodiment of the invention.

25 FIG. 12 is a cross sectional view of a first header and a second header in a deck frame according to an embodiment of the invention.

FIG. 13 is a perspective view of a first outside header element as attached to a second outside header element of a frame according to an embodiment of the invention.

FIG. 14 is a perspective view of a header or ledger board according to an embodiment of this invention.

FIG. 15 is a perspective view of a header or ledger board having a joist attached thereto according to an embodiment of this invention.

5        FIG. 16 is a perspective view of a header or ledger board having a joist exploded away from a slot on the ledger board according to another embodiment of this invention.

FIG. 17 is a side view of an existing deck attached to an edifice that includes a safety member or inverted ledger board attached to the edifice and attached to the  
10        existing deck according to an embodiment of this invention.

FIG. 18 is a perspective view of another embodiment of an existing deck and a ledger board fastened to an edifice to further support the existing deck.

FIG. 19 shows an arrangement of decks attached to a multi-family dwelling according to an embodiment of this invention.

15        FIG. 20 shows a post for use between stacked decks according to an embodiment of this invention.

FIG. 21 shows a cross sectional view of a post from FIG. 20 according to an embodiment of this invention.

## 20                    **Detailed Description of the Invention**

In the following detailed description of the preferred embodiments, reference is made to the accompanying drawings that form a part hereof, and in which are shown by way of illustrating specific embodiments in which the invention may be practiced. The embodiments illustrated are described in sufficient detail to enable  
25        those skilled in the art to practice the teachings disclosed herein. Other embodiments may be utilized and derived therefrom, such that structural and logical substitutions and changes may be made without departing from the scope of present inventions. The following detailed description, therefore, is not to be taken in a limiting sense, and the scope of various embodiments of the invention is defined

only by the appended claims, along with the full range of equivalents to which such claims are entitled.

FIG. 1 is a perspective view of a deck 100 attached to a residential structure 110 according to an embodiment of this invention. The deck 100 includes a first upright post 120 and a second upright post 122 and a frame 200 covered with a decking material 150. A cross member 124 is attached between the first upright post 120 and the second upright post 122. The cross member 124 supports the frame 200 and transfers the load of the deck to the upright posts 120, 122. The upright posts 120 and 122 are attached to anchor points 130 and 132. In one embodiment, the anchor points 130 and 132 are columns of concrete that are placed into the ground to a depth below the frost line. In other words, the anchor points 130 and 132 include the footings for the deck 100. In climates where frost and freezing is not a problem, there are other ways to anchor the deck. The frame 200 is made of endplates or headers and joists (shown in Figs 2 and 3). Attached to the frame 200 is the decking material 150. The decking material 150 can be in the form of individual units or in the form of modular decking units that include at least two individual units. The decking material is not limited to wooden boards or planks. Other shapes, such as stone shapes, are available. The decking material can be natural materials or man-made materials. The upright posts 120, 122 are connected to the anchor points 130, 132 by one of several methods. For example, the posts 120, 122 can be set into concrete associated with anchor points 130, 132. In another embodiment, L-shaped or J-shaped bolts are placed into the wet concrete forming the anchor points 130, 132. After the concrete associated with the anchor points 130, 132 has set, a U-shaped bracket can be placed or bolted onto a threaded end of the L-shaped or J-shaped bolt to hold the C-shaped bracket in place. The C-shaped bracket typically has openings therein so that the post 120, 122 can be bolted to the C-shaped bracket.

FIG. 2 is a perspective view of a frame 200 according to an embodiment of this invention. The frame 200 includes a first ledger board or header 230 and a second ledger board or header 232. Attached to the ledger boards or headers 230,

232 are individual joists 210, 212, 214 and 216. The individual joists can be natural or man-made material. In one embodiment, the frame 200 is made of a low-maintenance material, such as aluminum. The ledger boards or headers 230, 232 and the joists 210, 212, 214, 216 can be made by various extruding, casting, forming, bending, rolling, cutting, punching, notching, drilling or other techniques. The finish on the aluminum ledger boards or headers 230, 232 and the joists 210, 212, 214, 216 can be anodized, painted, PVC coated, powder coated or milled. The finish can also be formed using other techniques. One advantage of using a low-maintenance material such as aluminum is that the individual frame 200 portions are sufficiently light to allow a person or persons to move and place the individual portions during construction of the frame. The ledger boards or headers 230, 232 and the joists 210, 212, 214, 216 are held together with connectors that are first capable of temporarily holding the frame 200 together and then permanently holding the frame 200 together. This makes for efficient assembly of the frame. The frame 200 can be quickly assembled in a first step and then all the portions of the frame 200 can be permanently attached in a second operation. According to one embodiment of the invention, a ledger board or header 230 is attached to a structure. The outer perimeter of the frame is then constructed and supported. The supports can be temporary or can be a beam and post associated with the final deck. Once the frame is constructed, joists can be cut to length or if already cut, can be placed between the ledger boards or headers 230, 232. The frame 200, as assembled, presents a substantially flat decking surface 250 that allows for much more efficient construction when decking materials require a substantially flat surface are used as part of the finished deck. In the embodiment shown in Fig. 2, the ledger board or header 232 includes a spacing element 242. The ledger board or header 230 also includes a spacing element which is shown in Fig. 3. The spacing elements allow for easy assembly of headers and joists into a frame 200 having a substantially flat decking surface 250.

FIG. 3 is a top view of the deck frame 200 shown in FIG. 2. The deck frame 200 includes the ledger board or header 230, 232. The header or ledger board may

also be referred to as an end plate. The header or ledger board 230 includes a spacing element 240. The spacing element 240 is a lip or ledge which is formed along the bottom edge of the ledger board or header 230. Similarly, the header or end plate 232 includes a spacing element 242.

- 5           In one embodiment, the end plates or headers 230, 232 have ends that are cut off at 45 degree angles or are mitered. The frame also includes joist elements 210, 212, 214, 216. Joist elements 210 and 216 are also mitered or also have mitered ends which fit or meet with the metered ends of the end plates or headers 230, 232. In one embodiment, the joists are made of a man-made material such as aluminum.
- 10          In another embodiment, the joists are natural material such as wood.

          The spacing elements 240, 242 provide a ledge or area on which the edge of the joist 210, 212, 214, 216 can rest. This provides for ease of construction since one ledger board or header 230 is attached to an edifice and the outer perimeter of the frame 200 can then be constructed and supported. In aluminum construction,

15          forming the outer perimeter of the frame 200 can be simplified by using corner connectors 400. The joist 210, 216 can then be joined to the end plates or headers 230, 232 using corner connectors 400 (shown in phantom in FIG. 3 and shown in FIG. 4). Once the outer perimeter of the frame 200 is complete, joists can be placed between the two end plates or ledger boards or headers 230, 232. Once the outside

20          of the frame is formed from the headers or end plates or ledger boards 230, 232 and the joist 210, 216, the inner joists, such as 212, 214, can be placed on the spacing elements 240, 242 and attached. In one embodiment, the frame members are temporarily tacked or bonded together. It should be noted that the joists 210, 216 rest on the spacing element 240, 242. Spacing is also ensured in that the connectors

25          400 are provided with openings for receiving the connectors in the respective elements 210, 216, 230, 232 so that a level surface is presented along the top edge of the frame 200.

          FIG. 4 is a perspective view of a frame corner connector 400, according to an embodiment of the invention. The deck frame corner connector 400 includes a

30          first leg 410 and a second leg 420. The first and second legs are approximately or



substantially 90 degrees, with respect to one another. The ends of the legs 410, 420 are substantially square. For example, see the end 422 of leg 420. It should be noted that any cross sectional shape could be used for these corner connectors 400. In operation, the outer perimeter frame members are provided with openings which  
5 are slightly bigger than the cross sectional shape of the legs 410, 420. In operation, the assembler or user of the frame elements can merely place the connector 400 into the opening in the end of one of the headers 230, 232 and a mating joist 210, 216. The corner connector 400 assures that the joint formed will be substantially perpendicular or substantially 90 degrees. The mitered or 45 degree cuts on the  
10 ends of the headers or end plates 230, 232 and the joist 216, 210 also help to assure that the joints are along the outer perimeter of the frame 200 are each at substantially 90 degrees, and therefore, a square frame 200 is formed.

FIG. 5 is a perspective view of a header or ledger board 530, according to one embodiment of this invention. The header or ledger board 530 includes a main  
15 body portion 532 and a spacing element 540. The spacing element 540 is a portion of flat stock that is added on to the bottom of the main body portion 532. In this particular embodiment, the corners or ends of the main body portion 532 are not mitered but are made with square cuts. In this particular embodiment, each of the joists has an equal length and fits between the header or ledger board 530 and  
20 another substantially identical header on the other end. It should be noted that in one embodiment the end plate or ledger board 530 is made from a material capable of having a relatively thin wall, such as extruded aluminum, or some other extruded or formed metal.

In another embodiment, the ledger board or header 530 includes a solid main  
25 body portion 532 that contacts the building or edifice. The ledger board 530 includes a lip or ledge at the bottom of the main body 532.

In one embodiment of the invention, the ledger board or header 530 is made of metal and is adapted to receive joists made of wood or another material.

FIG. 6 is a perspective view of a header or ledger board 630, according to  
30 yet another embodiment of the invention. The header or ledger board 630 includes

a main body 632 and a spacing element 640. The spacing element 640 is attached to the main body 632. The main body 632 is hollow or thin walled. In some embodiments the main body 632 and the spacer 640 of the header 630 are formed from extruded aluminum.

5           In this particular embodiment, the ledger board or header 630 includes a first mitered end 650 and a second mitered end 652.

FIG. 7 is a perspective view of a header 730, according to yet another embodiment of the invention. The header 730 includes a main body 732 and a spacer 740. The main body and the spacer are formed in a single process where it is  
10           extruded all at once. Therefore, the spacer is not attached to the bottom side of the main body 732, but is formed as part of the extrusion process. As shown in FIG. 7, the header 730 includes a square end rather than a beveled end.

FIG. 8 is a perspective view of a header or ledger board 830, according to yet another embodiment of the invention. The header 830 includes a main body 832  
15           and several spacing elements 840, 841, 842, 843. The spacing elements are all at the same level, but rather than having a continuous ledge-type spacing element there is a number of individual spacing elements. The ends of the main body 832 are beveled or mitered. In addition, it should be noted that the individual spacing elements 840, 841, 842, 843 are shown as rectangular or square portions, which  
20           extend out from the bottom portion of the main body 832. It should be noted that other shapes could also be used where the individual leveling elements 840, 841, 842, 843 are rounded or of any other desired shape. The important thing with respect to the individual spacing elements 840, 841, 842, 843 is that the surface of each of the elements 840, 841, 842, 843 which abuts the bottom of the main body  
25           832 must be at substantially the same level or substantially the same height so that when joists are placed upon the individual spacing element, the top edge of the joist is substantially level with the top edge of the main body 832 of the header or end plate 830 so that a substantially level surface for decking is presented when the ledger board or header or end plate 830 is formed into a frame including a first  
30           header or ledger board or end plate and identical header or ledger board or end plate

and joists which are used to connect to the two end plates and rest upon the various spacing elements 840, 841, 842, 843.

FIG. 9 is a side view of a joist 914 that includes a first spacing element 940 and a second spacing element 942. The spacing elements 940, 942 are placed on the ends of the joists 914 and extend from a bottom surface 950 of the joist 914. In this particular embodiment, the header or ledger board or end plates do not include spacing elements but the spacing elements 940, 942 have been moved to the joist 914. Since each of the spacing elements 940, 942 is attached to the surface or made part of the surface 950, the joists can be spaced with respect to the headers or end plates and a final assembly of a frame will have the headers and corresponding joists forming a substantially flat surface which is also substantially flat or parallel with respect to surface 952 of the top part of the joist 914.

FIG. 10 is a perspective view of a corner connector that includes spacing elements 1040, 1042, according to an embodiment of the invention. The corner connector includes a first side 1020 and a second side 1022. The corner connector 1010 fits within a corner between a joist and a header. The spacing elements 1040, 1042 fit or abut a bottom surface of either a joist or a header. The top surface of the spacers 1040, 1042 are at substantially the same height or at substantially the same plane so that the spacing elements 1040, 1042 serve to make a top surface of the joist and the header form a flat or substantially planar surface for decking materials. This, of course, assumes that the thickness of a joist and the thickness of a header are the same.

FIG. 11 is a perspective view of a connector 1100 for attaching a joist to a header or ledger board of a frame. The connector 1100 includes a spacing element 1140, a first 90-degree corner connector 1120 and a second 90-degree corner connector 1122. The joist will fit between the two corner connector portions 1120, 1122 and will sit upon the top surface of the spacer element 1140. The spacer element 1140 extends beyond the two corner portions 1120, 1122. The extended portion of the spacing element 1140 fits below the joist. The top surface of this spacing element, therefore, maintains the spacing of the joist with respect to the

header while also providing a substantially 90-degree connection between the joist and the header by using the corner connectors. It should be noted that this type of fitting can be glued into place or temporarily tacked into place to connect a joist to a header and properly space them such that a perfectly flat or substantially flat top surface is presented on the deck frame so that the joist and header can be temporarily attached before being permanently attached. In other words, a person assembling a deck can temporarily attach the headers and joists in a first step and space them so that they are square and so that they produce a top decking surface which will be substantially flat. Once all the spacing is complete, the person can take a connector and permanently connect the connector 1100 to the respective joists and end pieces to form a deck.

FIG. 12 is a cross-sectional view of a first header or outside header 1230 and a regular or inside header 1232. The outside header 1230 includes a spacing element 1240. The outside or edge of the header has an indentation 1234 therein. The inside header 1232 also includes a spacing element 1242. The insider header 1232 is adapted for fitting on to a house or other structure. A joist 1212 rests upon the spacing elements 1240, 1242. It can be seen that the joist 1212, the outside header 1230, and the inside header form a decking surface 1250 which is substantially flat and ready to receive decking material that requires a substantially flat surface. The joist 1212 is attached to the inside header 1232 with an angle bracket 1210. The angle bracket has openings 1211 therein. In some of the openings, there are fasteners or screws 1213 therein, which is used to permanently fasten the angle bracket 1210 to the header. The angle bracket 1210 has a first wall 1214 and a second wall 1215 which are substantially perpendicular or substantially at 90 degrees with one another. Therefore, the angle bracket 1210 holds the joist 1212 at a substantially perpendicular angle with respect to the ledger board or header 1232. The spacing elements 1242, 1240 assure that the top surface or surface 1250 is substantially flat so that decking material that requires a flat surface can be applied to the frame.

To construct this present invention, first a header or ledger board is attached to the house or edifice. The header or ledger board, according to one embodiment of this invention, has a spacing element shaped as a flange protruding perpendicular to the wall, which it is attached to, and extending the entire length of the header.

5 This allows the joists to be placed in appropriate spots without the use of any brackets or fasteners. Next, the side pieces or joists are attached to the header or ledger board by using L-shaped brackets on both the inside and outside edges. On the outside edge of the header and the side piece, there is an indented portion that runs the length of the side piece or joist. The indentation allows the bracket to be  
10 fastened while remaining less than flush with the protruding edges so that a skirt board can be attached flush to the frame. Next, the side pieces are attached to the outside header utilizing the same method. The outside header has similar indentations to the side pieces on the outer edge and also has a similar flange to the header attached to the house.

15 After the perimeter frame is fully assembled and supported temporarily or permanently, the joists are set in place. This is done by cutting the joists to length and setting them in place by resting them on the flanges that protrude from the ledger boards or headers. In another embodiment, the joists are already cut to length and the deck frame is shipped in kit form. Once this is done, L-brackets are placed  
20 in the correct location and fastened to both the joist and the headers. To aid in the speed, accuracy, and ease of installation the brackets may have an adhesive pre-applied to them, which allows them to be set in place without holding/clamping them while the fasteners are connected.

FIG. 13 shows the connection of an outside header 1230 attached to a joist-type unit 1310 using a bracket 1300. It should be noted that the indentation 1234,  
25 1334 of the header 1230 and the joist 1310 allows space for the connecting bracket 1300. The bracket 1300 can therefore be placed on the outside surface or the exterior visible surface of the frame that is formed from the header 1230 and the joist unit 1310. The indentation area 1334, 1234 and the connector 1300 can be  
30 covered to produce a frame that is more aesthetically appealing to the end user. It

should be noted that the angle between the header 1230 and the joist unit 1310 does not necessarily have to be at 45 degrees. This allows decks to be made that are not totally made from right angles, or they are not totally square. This further contemplated that rounded decks and other decks may be made in much the same way as discussed above with respect to FIGs. 1-13.

FIG. 14 is a perspective view of a ledger board or header 1400 according to an embodiment of this invention. The ledger board 1400 includes a main body portion 1410. Attached to the main body portion is a flashing 1420 and a ledge or spacing element 1430. The spacing element 1430 is of sufficient weight so that it can support the ends of at least one or more joists which are, or will be, attached to the ledger board or header 1400. The spacing element 1430 assures that the joists are spaced with respect to the header main body 1410 so as to present a substantially flat surface at the top edge of the main body portion 1410 of the ledger board 1400. The ledger board also includes the flashing 1420. The flashing 1420 provides for weather resistant or weatherproof attachment of the ledger board 1400 to an edifice, such as a house or apartment complex, or any other residential or commercial building. The flashing 1420 prevents moisture from collecting behind the header or ledger board 1400. The ledger board 1400 is attached to a building so that the ledger board main body 1410 and the flashing 1420 abut the building. Siding is then attached over the flashing to provide an aesthetically pleasing look as well as a weatherproof or weather resistant attachment to the edifice or building. The flashing 1420 can be welded or the flashing 1420 can be extruded from the material of the header or ledger board 1400. In addition, the spacing element 1430 can also be either welded or attached to the bottom portion of the main body portion 1410 of the ledger board or can be extruded from the same material of the ledger board main body 1410. As shown in FIG. 14, the main body portion 1410 of the ledger board includes a hollow portion. In other embodiments, the ledger board 1400 can be a solid piece of material. In some embodiments, the ledger board 1400 is made from aluminum. Aluminum can be extruded so that a main body 1410, as well as the spacing element 1430 and flashing 1420, are integrally formed with the main body

1410 of the ledger board or header 1400. In other embodiments, the spacing element 1430 and the flashing 1420 can be attached to the main body portion 1410 by welding. If aluminum is used as the material, a welding process that allows aluminum to be welded must be used.

5           FIG. 15 is a perspective view of another embodiment of a header or ledger board 1500. The header or ledger board 1500 includes a main body portion 1510 and a flashing portion 1520. The flashing portion 1520 prevents moisture or reroutes moisture away from the ledger board and specifically away from the attachment of the ledger board 1500 to the side of a house or other commercial or  
10       residential building. The ledger board also includes a first spacing element 1511 and a second spacing element 1512. The spacing element includes a surface 1513 and a surface 1514 which are substantially coplanar with a bottom portion of the main body portion 1510 of the ledger board 1500. The spacer 1511 and the spacer 1512 are spaced apart from one another along the length of the ledger board 1500.  
15       The spacers 1511 and 1512 correspond to spacings necessary to pass various building codes. The spacers 1511 and 1512 are in the form of brackets. Each spacer 1511 has a pair of sidewalls 1515, 1517. The sidewalls 1515 and 1517 are spaced apart from one another so that a joist, such as joist 1540 can be inserted within the spacing element, such as spacing element 1511 or 1512. The spacers  
20       1511, 1512 also include an opening 1521, 1522, respectively. The opening allows any moisture that might be introduced between a joist and a header or ledger board 1500 to run away. In other words, the openings 1521, 1522 prevent moisture from accumulating between the joist and the main body 1510 of the header or ledger board 1500. The spacing elements 1511, 1512 are attached to the header or ledger  
25       plate 1500. In one embodiment, the ledger plate 1500 is made from aluminum and the spacers 1511, 1512 are welded to the ledger plate 1500 on the major surface which is opposite the major surface associated with the flashing 1520. In some embodiments, the flashing 1520 is attached to the main body portion 1510 of the ledger or header plate 1500 by welding. In other embodiments, the flashing 1520

may be extruded from the same material as the main body 1510 of the header or ledger plate 1500.

The joist 1540 may also be made of man-made or natural material. In one embodiment, the joist 1540 is made of wood and in other embodiments the joist  
5 1540 is made of extruded aluminum.

FIG. 16 is a perspective view of a header or ledger plate 1600. In this particular embodiment, the ledger plate 1600 includes a main body 1610. Attached to the main body are spacing elements 1611 and 1612. The spacing elements include spacing surfaces 1613 and 1614. The spacing elements also include a first  
10 sidewall 1615 and a second sidewall 1617. The sidewall 1615 and 1617 are spaced so as to receive or accommodate the dimensions of a joist 1614. The spacing elements 1611, 1612 also include an opening 1621, 1622, respectively. The opening allows any moisture that might be introduced between a joist and a header or ledger board 1600 to run away. In other words, the openings 1621, 1622 prevent  
15 moisture from accumulating between the joist and the main body 1610 of the header or ledger board 1600. In some embodiments of the invention, the joist 1640 is a natural material, such as wood. In other embodiments, the joist 1640 can be made of a metal material or other man-made material. The joist 1640 has an end 1642 which fits between the sidewall 1615 and 1617 of the spacing element 1612. The  
20 end 1642 also rests on the surface 1614 when finally assembled. The spacing element 1611 and 1612 are spaced from one another and correspond to the spacing necessary to meet various building codes. The surfaces 1613 and 1614 of the associated spacing elements 1611, 1612, respectively, are spaced upward from the bottom surface of the main body 1610 of the header or ledger board 1600. The  
25 support surfaces 1613 and 1614 of the spacing element 1611 and 1612, respectively, are spaced so that the top surface of a joist 1640 is substantially coplanar with the top surface of the ledger board or header 1600.

FIG. 17 is a cross sectional view of a ledger board or header 1700 which is placed below an existing deck 1780. The existing deck 1780 is attached to an  
30 edifice 1782 and specifically a wall 1784 of the edifice 1782. The existing deck



1780 may have certain problems associated with moisture or lack of strength and therefore the additional ledger board 1700 is placed underneath the existing deck. The ledger board 1700 includes a main body portion 1710 and a lip 1720. The lip extends beyond the ledger board associated with the existing decking or extends so  
5 that it supports an end of the joist near the edifice 1782. The ledger board 1700 is added as a safety feature to keep existing decks from failing. The addition of the ledger board 1700 provides additional strength to the existing deck.

FIG. 18 shows another embodiment of the ledger board 1800. The ledger board 1800 has a main body 1810. The ledger board 1800 is placed underneath a  
10 corresponding ledger board or header board of an existing deck 1880. Again, the ledger board 1800 adds additional support to the existing deck 1880 and prevents premature failure of the existing deck 1880. The ledger boards 1800 and 1700 are looked upon as providing additional safety for existing decks. The ledger board 1800 is attached to the existing deck 1880 using a set of tabs, such as the tab 1830.  
15 The tab 1830 is attached to the main body portion 1810 of the ledger board 1800. In one embodiment, the tab such as 1830 is welded to the main body portion 1810 of the ledger board 1800. The tab 1830 is also provided with an opening for receiving a fastener that can be placed into the existing deck 1880.

FIG. 19 is a view of a decking system used in multi-family dwellings. In  
20 other words, an apartment complex or other commercial building where there are multiple decks. One deck 1910 is stacked upon another deck 1920. The decks 1910 and 1920 are formed as discussed above or may be existing decks. A set of posts 2000, 2001, 2002, 2003 are used to support the decks 1910 and 1920. For example, the post 2003 supports one portion of the deck 1920 at one end. At the other end,  
25 the post 2003 may be placed in connection with a footing or on a patio associated with the multi-family dwelling. The post 2000 is positioned exactly over the post 2003 and supports the deck 1910. Posts 2002 and 2001 are similarly arranged and support a different portion of the deck. The posts are stacked or aligned so that the weight at the top deck and the post is transferred down the posts to the ground or  
30 footings.

FIG. 20 shows either a superior post construction or a add on that can be added on to existing posts to further strengthen them. The post shown in FIG. 20 corresponds to the post 2000 shown in FIG. 19. FIG. 21 is a cross sectional view of the post 2000 from FIG. 19. The construction of this post will now be discussed.

5 The post 2000 includes an inner post and an outer sleeve 2010. The inner post 2100 can be an existing post from an existing deck. In the alternative, the post may be a replacement post for existing posts. In other words, the inner post 2100 can be a wooden structure or can be a man-made structure, such as aluminum. A sleeve 2010 is fit around the post 2100 and provides further strength to the post 2000. At  
10 each end of the sleeve 2010 are flanges 2020, 2022, 2024, and 2026. The flanges 2020, 2022, 2024, and 2026 provide space upon the decking where the post can be attached to the decking of an existing deck or a newly built deck. The post 2100 within the sleeve 2010 provides further strength and therefore further safety to either existing decks or to decks that are built with the post 2000.

15 Advantageously, the present invention provides a non-welded, structural framing system for decks that is non-wood and maintenance free and that can be constructed more quickly and simply than wood framed decks. In addition, the frame members of the deck lie flatter or are truer so that a substantially flat or true surface is presented for decking materials. The materials and processes for  
20 constructing the deck from the materials results in a higher level of precision and tolerance. In addition, unique methods for constructing the deck simplify the building process. Furthermore, since all the components are manufactured utilizing materials and processes with a high tolerance the finished frame structure will be much more level individually and as a system than one comprised of wood. This  
25 will also allow for quicker installation of materials that require flatter surfaces for installation like StoneDeck (patent pending) because the framing system will not have to be planed/sanded to achieve the required levelness.

An apparatus for a deck includes a first frame member, and a second frame member. One of the first frame member or the second frame member has a spacing  
30 element thereon. The spacing element spaces the one of the first frame member or

the second frame member with respect to the other of one of the first frame member or the second frame member. The spacing element includes a lip formed with respect to one of the first frame member or the second frame member. The spacing element can also a connector associated with at least one of the first frame member or the second frame member. A method for assembling a deck frame that includes placing a first frame member with respect to a second frame member, wherein one of the first frame member or the second frame member has a spacing device thereon; temporarily attaching the first and the second frame members; and permanently attaching the first and the second frame members.

10           Although specific embodiments have been illustrated and described herein, those of ordinary skill in the art will appreciate that any arrangement calculated to achieve the same purpose can be substituted for the specific embodiments shown. This disclosure is intended to cover any and all adaptations or variations of various embodiments of the invention. It is to be understood that the above description has been made in an illustrative fashion, and not a restrictive one. Combinations of the above embodiments, and other embodiments not specifically described herein will be apparent to those of skill in the art upon reviewing the above description. The scope of various embodiments of the invention includes any other applications in which the above structures and methods are used. Therefore, the scope of various  
15           embodiments of the invention should be determined with reference to the appended claims, along with the full range of equivalents to which such claims are entitled.

20           It is emphasized that the Abstract is provided to comply with 37 C.F.R. §1.72(b) requiring an Abstract that will allow the reader to quickly ascertain the nature and gist of the technical disclosure. It is submitted with the understanding  
25           that it will not be used to interpret or limit the scope or meaning of the claims.

          In the foregoing Description of Embodiments of the Invention, various features are grouped together in a single embodiment for the purpose of streamlining the disclosure. This method of disclosure is not to be interpreted as reflecting an intention that the claimed embodiments of the invention require more  
30           features than are expressly recited in each claim. Rather, as the following claims

reflect, inventive subject matter lies in less than all features of a single disclosed embodiment. Thus the following claims are hereby incorporated into the Description of Embodiments of the Invention, with each claim standing on its own as a separate preferred embodiment.